Leadership in the Information Age

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THE US ARMY RECOGNIZES the revolution in military affairs (RMA) sparked by the technological advances in data automation and information technology (IT). Force XXI is a conscious and deliberate effort to evolve the Army's organization, doctrine and tactics to integrate advances in technology. Since all good leaders adapt their leadership style to fit the situation, military leadership in the coming century will have to evolve as well to accommodate the changing situation.

History has shown that superior technology is not always victorious—technology is only a tool. Military leaders decide how to use the tool to accomplish their mission. Inappropriate use of war's tools will result in military defeats, which, if significant, can lead to national disaster. Perhaps the most dramatic example of leaders who failed to grasp the impact of technological change is the fall of France in 1940. France emerged from World War I victorious and a world superpower. The French military leadership was aware of significant emerging technological developments, and their official army regulation, *Provisional Instructions*, specifically addressed them in 1936.[1] Although the French industrial complex could manufacture state-of-the-art military equipment of any type, the problem lay in the French leaders' lack of understanding about how these emerging technologies would fundamentally alter warfare's nature.

The astonishingly rapid defeat of the French army in 1940 is often incorrectly attributed to inferior technology. The fact is, France was technologically superior in many ways. For example, they not only had tanks, they had bigger, more powerful tanks—and lots of them. Without even counting the British forces on French soil, the French had 3,254 tanks compared with only 2,574 for the Germans. In addition, the French Char B was probably one of the best tanks in the world in terms of firepower and armor thickness. However, the Char B was *tacti-*

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cally inferior, even if it was not technologically inferior. The French clearly intended it to be armored artillery, parceled out piecemeal to support the infantry. In doing so, they planned on set-piece slugging matches that did not require mobility. The most striking evidence of this philosophy was the open engine grille on the left side of the tank. This allowed even smaller-caliber German guns easy immobilization shots from the left flank. In addition, the Char B was slower, nearly impossible to fire outside of its forward arc and lacking in radios. In short, it was totally unsuited to combat the highly mobile German *Blitzkrieg* warfare.[2]

In addition to the tactical deficiencies caused by poor conceptual design, the French employment of armor was doctrinally deficient. The French subordinated small groups of armor under infantry leaders who did not understand armor. This ensured that the armor could not maneuver faster than the infantry and could not mass effectively. Further, poor logistics support led to large numbers of French tanks running out of fuel. Even though the Germans were hundreds of miles from their internal lines, they did not experience these problems. Independent tank units were capable of massing to penetrate and exploit breakthroughs.[3]

The lesson of France in 1940 is relevant to us today because we are in a similar situation. We are the victorious superpower and have the superior industrial capacity, resources and technology. Like the French military leaders, we recognize the RMA

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and have begun to address it in our doctrinal manuals. All our senior Army leaders acknowledge that the world has changed every time they brief an audience. They know that the situation our leaders and soldiers will face in the next war will be unlike anything that occurred before. How do we prevent a US military defeat from a situation we cannot predict?

As Michael Howard asserted, "whatever doctrine the Armed Forces are working on now, they have got it wrong."[4] However, strong leadership can rapidly adapt to new situations in time of war, provided the doctrine is not too far off track. Therefore, we need to develop leaders capable of adapting to crises in the information age, even as we conduct Force XXI exercises to evolve our organization, doctrine and tactics. Although it is impossible to predict the many pitfalls that await our Army's future leaders, the characteristics of information-age technology provide some clues as to the challenges these leaders will face.

A Double-Edged Sword

The revolutionary leap forward in communications technology is probably the greatest change impacting 21st-century leadership. Force XXI will dramatically improve communications throughout the Army, making it possible for the highest echelons in the chain to have direct connectivity to squad level. But there is a downside to this increased communication capability. The first, and most obvious danger, is that senior leaders may misuse the tool to micromanage and skip intermediate levels of command. Although the temptation

to use direct influence on lower echelons will be great, the impulse must be resisted. Tomorrow's leaders must recognize that they are constrained by the same human limits that dictate an efficient span of control today. The senior leader's job is to look at the larger picture and allow his subordinate leaders to address the details. Because a senior leader *can* have direct contact with the lowest echelon does not mean he *should*.

Modern communications allows for command and control of units without requiring the leader's physical presence, thereby allowing greater dispersion and depth on the battlefield. However, the lack of a leader's physical presence can have a number of deleterious effects on the unit's efficiency. One example where the impact will be most obvious is in the loss of fidelity in communications. Since more than 87 percent of human communication is nonverbal, over reliance on digitization can result in a leader losing the perspective he would have had from interpretation of his subordinates' nonverbal signals. Similarly, the leader's ability to fully communicate his intentions to subordinates is compromised, because even with perfect receipt of the written message, the nonverbal emphasis is lost. Physical presence also plays a major role in inspiring and motivating soldiers to perform their best. Successful leaders have always led by example, *and* from the front. A danger facing the US Army in the next century is technology will work so well, leaders may no longer feel the need for physical presence with their soldiers.

Information overload. In the past, a leader's main problem was the accurate and timely receipt of battlefield information. Quality information is the key to good decision making. However, the problem today, is too much information. The information age provides the leader with unprecedented information from every imaginable source and in mind-numbing detail. Unfortunately, there is a very finite limit to the amount of information the human brain can usefully process. Machines can collect data in quantities that far exceed that limit. For example, satellite reconnaissance has already collected more imagery than humans will ever be able to review, even if imaging stopped today.

The human brain, faced with more data than it can process, will automatically filter out what it considers unimportant. Only a small subset of data received will be processed as information, thereby impacting the decision making process. The challenge for leaders is to make the natural filtering process a conscious effort rather than an unconscious

A soldier participates in a field training exercise at Fort Drum, New York, with elements of the 10th Mountain and 89th Infantry divisions.

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reaction. Leaders need to make hard choices in advance about what kinds of information they need and reject the trivia that now floods into the modern tactical operations center. Subordinate leaders must also be trained to be selective in what they forward to higher echelons. Knowing *what* and *when* to filter is an important leadership skill that requires training focus.

Information Warfare's potential impact. Increasing Army reliance on data automation and digitization creates serious vulnerabilities. The United States cannot maintain undisputed IT preeminence because the commercial sector produces new generations of equipment faster than our military acquisition system can purchase them. State-of-the-art information systems are sometimes obsolete long before they are fielded. This situation, coupled with the fact that information is now considered an independent medium for combat, means that the US cannot expect to rely on the wartime use of all of its information systems like it can in peacetime.

In the future, US adversaries will try to deny, disrupt, degrade or destroy our information processes. Operation *Desert Storm* demonstrated the tremendous military advantage of using precise navigation signals from space. The technology now pervades every US military system. However, the Global Positioning System (GPS) signal is one of the easiest to jam, and GPS receivers can be deceived. Even current commercial off-the-shelf systems can interfere with our use of that technology. However, the Department of Defense is reluctant to even conduct exercises without GPS now for safety reasons. The leadership challenge here is not to become so dependent on technology that we cannot react when that technology is disrupted. A successful leader will have to adapt to any situation, and it is virtually guaranteed that our adversaries will attack the

A 2d Infantry Division soldier probes the digital environment during a *WARFIGHTER* exercise in Korea.

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technologies we rely on most. While we should continue to develop organization, doctrine and tactics to incorporate the best emerging technologies, we must not forget that our adversaries are thinking opponents that will adapt as well.

Increased reliance on simulation. Another Force XXI trend is the increased reliance on simulation to replace live-fire exercises and training. Cost is a major driver behind this trend—we simply do not have the resources to train as we did in the past given the downward spiral of resources. Simulations allow troops more training time. Although increasingly more realistic, simulations cannot fully substitute for actual hands-on experience. I recall a system I tested for North American Air Defense that was supposed to provide the National Command Authorities with timely indications of hostile missile launches against the United States and Canada. The developer tested the system thoroughly thousands of times with a sophisticated computer simulation, and the system worked flawlessly against the simulated threats. However, I managed to crash the multimillion dollar computer system in less than 2 minutes by using live inputs. It seems

the various clocks at the radar sites were not perfectly synchronized. When the computer tried to reconcile the minor differences in the clocks, it calculated a physical impossibility and crashed. Of course, the simulation's programmers had assumed a consistent time standard.

This example illustrates a pitfall in relying on simulations. While the above problem was easily fixed once identified, other issues may not be as easy to fix until it is too late. Training simulations, in particular, are hazardous in that they force students to "learn" unreal tactics and ignore proper tactics for a given situation. Since more and more training will be conducted on simulators, the discrepancies between the real world and the simulator become critical. Our Army's 21st-century leaders need to ensure that there is a balanced approach to using live and simulated training devices and that all simulations are validated prior to use.

Cultural Change and the Information Warrior

One of the challenging aspects of leadership in the next century will be the changing nature of sol-

diers. Technology's increasing complexity requires ever-greater levels of sophistication in the soldiers who operate the technology. The individual soldier's education and training level will have to increase as the Army digitizes. For example, when F-15 cockpits became fully digitized in the US Air Force, the required training time actually *quadrupled* for individual pilots. A recent US Army Command and General Staff College guest speaker stated that he has already found that he had to *increase* the number of signal officers in an armor company to support the digitization of the modern tank, rather than decrease their numbers, as had been projected from simulations.[5] The projected personnel savings from digitization were illusory. Instead, the Army will require a better-educated and more specialized work force to support increasingly complex and constantly evolving systems.

The US Army leadership culture will need to evolve to deal with a different type of soldier. Currently, those professionals who best understand emerging IT find a hostile climate in the services. People adept at using the new technology are ridiculed as being "nerds" or "geeks" and not true soldiers. However, 21st-century Army leaders need to recognize that moving and shooting apply to the information medium as well. When the fog and friction of combat begin to stress the information systems, a successful leader needs to be technically proficient to continue the mission with degraded systems and improvise new solutions. Joint doctrine requires that we achieve battlespace dominance to prevail in a military conflict, and every leader needs to become an "information warrior" in the sense that he appreciates the impact of friendly and hostile information systems on the mission.

Like recent advertisements for mutual funds on television, the Army understands that past performance is no guarantee for future success. The IT revolution is impossible to ignore and clearly changes the fundamental nature of warfare in ways we do not yet completely understand. However, we do know from centuries of recorded military history that the key to survival in times of turbulent change

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is military leadership. Successful leaders will adapt to the changes and use new technologies as tools, not solutions. Information-age technology will challenge future leaders to become adept in selectively applying these new tools. Increased communication, better simulations and greater access to information works both for and against future leaders. Reliance on IT makes us more dependent on winning the information war and requires leaders to be competent information warriors to achieve mission success.

The United States stands today as the unchallenged superpower with superior technology, but technology alone will not maintain our superpower status. Flexible military leaders must be able to rapidly adapt to problems we have not yet encountered. In the final analysis, it will be our leadership quality, not our past performance or technological advancement, that determines whether or not our nation endures. ***MR***

NOTES

1. Jonathan M. House, *Toward Combined Arms Warfare: A Survey of 20th-Century Tactics, Doctrine, and Organization* (Fort Leavenworth, KS: US Army Command and General Staff College (CGSC), August 1984), 64.
2. Brian Bond, "Battle of France," from *Decisive Battles of the Twentieth Century: Land-Sea-Air*, ed. Noble Frankland and Christopher Dowling (New York: David McKay Co., 1976), 101-13. Excerpt reprinted in *C610 Syllabus, Book of Readings*, (Fort Leavenworth: CGSC, December 1995), 75-77.
3. Ibid., 79.
4. Michael Howard, *Military Science in an Age of Peace, RUSI, Journal of the Royal United Services Institute for Defence Studies* (March 1974), 3-9. Excerpt reprinted in CGSC, *C610 Syllabus/Book of Readings* (Fort Leavenworth, KS, December 1994), 45.
5. CGSC General Officer Guest Speaker, name protected under the principles of academic freedom, November 1995.

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